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# On a Third Group of Flattened Ground Spiders from Australia (Araneae, Lamponidae)

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## ABSTRACT

A new genus and species, *Platylampona mazeppa*, are described for an unusual, newly discovered ground spider from Queensland and northern New South Wales. Although the body of these animals is greatly flattened, as is characteristic of both trochanteriids and hemicloeine gnaphosids, the new genus belongs to neither of those groups but rather to the subfamily Lamponinae, and thus represents a third lineage of Australian gnaphosoids that has acquired a greatly flattened habitus.

## INTRODUCTION

Among the numerous Australian spiders belonging to the superfamily Gnaphosoidea are several genera notable for having greatly flattened bodies—so much so that many of these taxa look like animals that have been smashed under an unabridged dictionary. Indeed, their bodies are often so flattened that the legs are laterigrade (i.e., resemble those of crab spiders in being twisted, with the morphologically anterior surfaces directed dorsally, thereby minimizing the effective dorsoventral height of the appendages). Outside of Australia, such taxa are relatively rare, and have thus provided inducement for the establishment of such classical family-group names as the Trochanteriidae Karsch (1879) and Platoridae Simon (1890). In Australia, however, they form a significant proportion of the ground spider fauna, and are frequently found under the peeling bark of eucalypts.

Some authors (e.g., Wunderlich, 1987) have considered all these extremely flattened

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taxa to be members of a single monophyletic group, but spinneret morphology indicates that they actually belong to two separate families (Platnick, 1990, 2002). Most of the flattened genera are "lower gnaphosoids", belonging to the Trochanteriidae and retaining a sclerotized, complete distal ring on the anterior lateral spinnerets, but *Hemicloea* Thorell (1870) is a "higher gnaphosoid", having lost that distal ring. By losing the distal ring, the "higher gnaphosoids" (i.e., members of the families Lamponidae, Prodidomidae, and Gnaphosidae) have gained the ability to expand and contract the soft cuticle surrounding the piriform gland spigots on their anterior lateral spinnerets. *Hemicloea* has thus generally (and correctly) been placed in the family Gnaphosidae, as it also has the greatly enlarged and widened piriform gland spigots, situated on an expandable mound, that are putatively synapomorphic for that family (Platnick, 1990).

It was surprising, however, to discover another Australian ground spider with a greatly flattened habitus that seems to be neither a trochanteriid nor a hemicloeine gnaphosid. The present paper is devoted to a description of this unusual species, and an exploration of its relationships. The format of the description follows that of Platnick (2000). Material has been examined from the collections of the Australian Museum, Sydney (AMS), the Australian National Insect Collection, Canberra (ANIC), and the Queensland Museum, Brisbane (QMB).

## RELATIONSHIPS

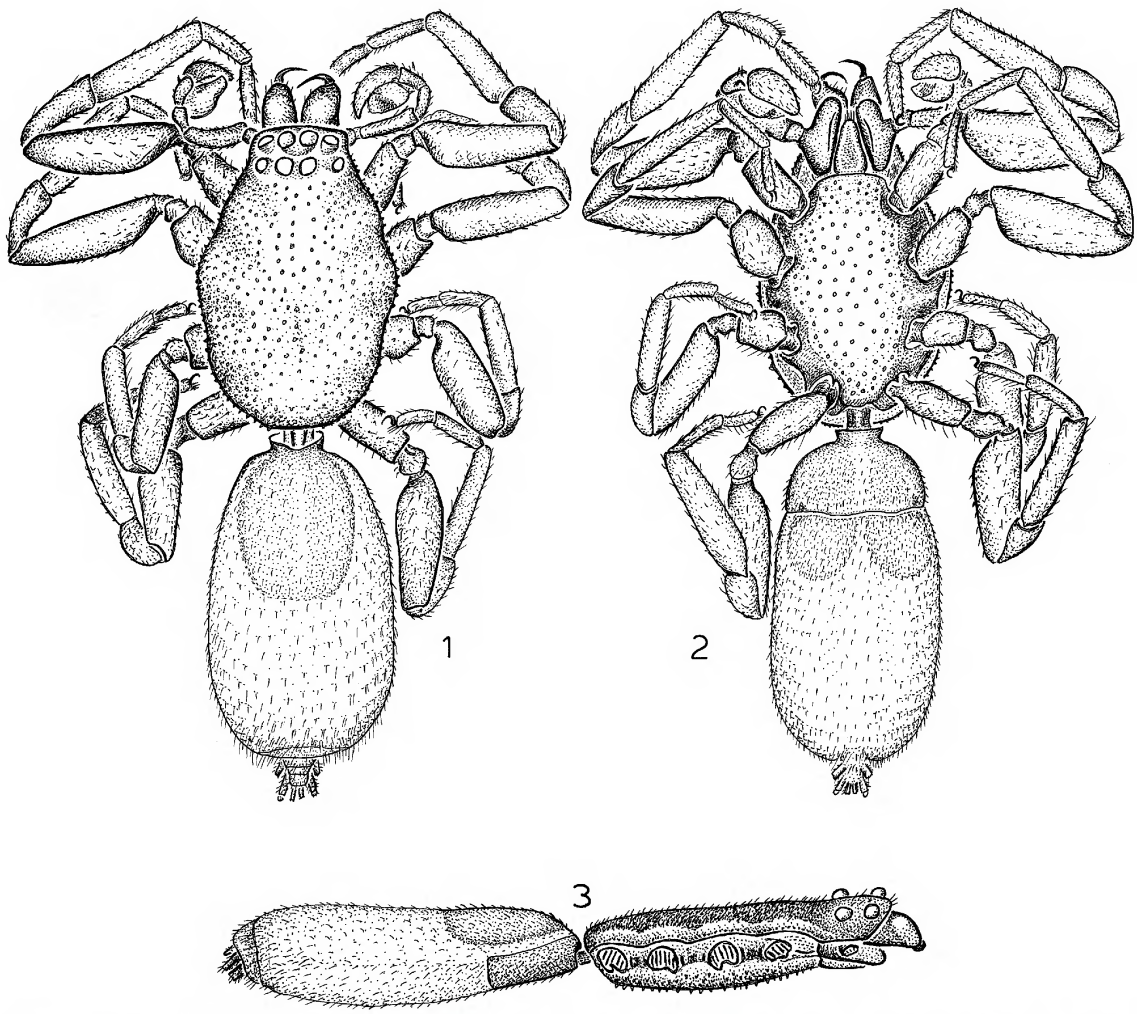
The intriguing species described below as *Platylampona mazeppa* (figs. 1–3) seems clearly to be a member of the subfamily Lamponinae. Its placement as a gnaphosoid is supported by the irregularly rectangular and completely flattened posterior median eyes, which have their tapeta obliquely aligned and converging posteriorly (implying that these eyes are used not to focus an image but rather to determine the direction of polarized light; Dacke et al., 1999).

The anterior lateral spinnerets of this species are composed of a single segment; the sclerotized distal ring representing a second segment is reduced to a crescent surrounding the area of the major ampullate gland spigots. As a result, the area surrounding the piriform gland spigots consists of a mound of soft, expandable cuticle. These features indicate that *Platylampona* is a "higher" rather than "lower" gnaphosoid (i.e., a member of the Lamponidae, Prodidomidae, or Gnaphosidae, rather than the Ammoxenidae, Cithaeronidae, Gallieniellidae, or Trochanteriidae; Platnick, 1990, 2002).

Although insufficient specimens have been available to examine the spinnerets of *Platylampona* with scanning electron microscopy, it seems clear from light microscopy that the piriform gland spigots of these spiders are both few in number (perhaps only one or two) and small in size, relative to the major ampullate gland spigots. These features indicate that the species is a lamponid, rather than a prodidomid or gnaphosid (members of those families have enlarged piriform gland spigots that are either greatly elongated or widened; see Platnick, 1990).

The placement of *Platylampona* in the Lamponidae is corroborated by the presence of the pair of invaginated abdominal sclerites, situated just behind the booklung openings, that appear to be synapomorphic for that family (Platnick, 2000). These sclerites are small and inconspicuous in females of *Platylampona*, but in males they are enormously expanded, and cover about one-fifth of the abdominal venter (fig. 2). Such expanded sclerites have been found also in some males of *Lamponina elongata* Platnick (2000: 129). Both sexes of *Platylampona* also have a greatly enlarged and bent seta on the cheliceral promargin, adjacent to the base of the fang. This character optimized as a lamponid synapomorphy in the analysis of Platnick (2000) but is also widespread outside the group, and its distribution needs to be documented in detail across a wide spectrum of dionychans before its phylogenetic significance can be assessed.

Specimens of *Platylampona* obviously lack the elevated pars cephalica typical of the lamponid subfamily Pseudolamponinae, and have the distinctive longitudinal groove near the median edge of the endites that is characteristic of the subfamilies Centrothelinae and Lamponinae instead. Females lack the row of three greatly enlarged cylindrical




Figs. 1–3. *Platylampona mazeppa*, new species, male. **1.** Dorsal view. **2.** Ventral view. **3.** Lateral view of cephalothorax and abdomen.

gland spigots on the posterior median spinnerets that is characteristic of centrothelines. Their placement in the subfamily Lamponinae is supported by the typically lamponine pedicel sclerites, which form a tube. The endites are also evenly rectangular, as in other lamponines, although (as one would expect in such a flattened animal), the labium and endites are longer than in other lamponines (fig. 2).

To test this placement, the cladistic analyses of Platnick (2000, figs. 1, 2) were rerun, with *Platylampona* added to the matrix; the character coding for this extra row is 01101 01011 11111 10000 01000 00001. In Hennig86, version 1.5 (Farris, 1988), the h* and bb* tree-generating options produced 2070 cladograms of 52 steps; three rounds of successive approximations weighting stabilized on 48 cladograms with a length of 276. Even the strict consensus of those 48 cladograms resolves all but one of the previously hypothesized nodes (the genera *Pseudolampona* Platnick and *Paralampona* Platnick do not always cluster together), but in all cases *Platylampona* forms a trichotomy with the lamponine genera *Lamponega* Platnick and *Lamponicta* Platnick.

In Pee-Wee, version 2.6 (Goloboff, 1997) implied weighting of the expanded matrix

produced just three cladograms at all six settings of the concavity function. Here again, *Platylampona* always clustered with *Lamponega* and *Lamponicta*, sharing with those two genera the fusion of the chilum with the anterior margin of the carapace.

It is common, among gnaphosoids with such a flattened body, for the fourth pair of trochanters to be elongated. This character is conspicuous in some trochanteriids (hence the family name) and also in some hemicloeine gnaphosids. In *Platylampona*, however, the laterigrade leg position is accommodated by elongation of the fourth pair of coxae, rather than trochanters (figs. 1, 2).

## FAMILY LAMPONIDAE

## SUBFAMILY LAMPONINAE

### ***Platylampona*, new genus**

TYPE SPECIES: *Platylampona mazeppa*, new species.

ETYMOLOGY: The generic name refers to the general appearance of these flattened lamponids, and is feminine in gender.

DIAGNOSIS: In the existing key to lamponine genera (Platnick, 2000: 14), specimens of *Platylampona* will key out to *Lamponova* Platnick because the ventral surface of metatarsi and tarsi I and II does have a divided (if weak) scopula, the sternal surface is smooth with circular punctations rather than rugose, and the female epigynum lacks an anterior hood (males of *Lamponova* remain unknown). The greatly flattened habitus (figs. 1–3) and sinuous lateral margins of the carapace (fig. 1) immediately separate the genus from *Lamponova* and all other lamponids. In having the chilum fused to the anterior margin of the carapace, producing a medial prolongation of that margin, *Platylampona* specimens resemble those of *Lamponega* and *Lamponicta*; they can be distinguished from the former by the flattened (rather than greatly elevated) sternum and from the latter by the presence of a retrolateral tibial apophysis on the male palp and the absence of a posterior spermathecal bulb in females. As indicated above, specimens might be confused with either trochanteriids (but lack a distal ring on the anterior lateral spinnerets) or hemicloeine gnaphosids (but have small, rather than enlarged, piriform gland spigots on the anterior lateral spinnerets).

DESCRIPTION: Small spiders, total length 2.9–3.8. Carapace dark red, greatly flattened, tuberculate, coated with long setae originating from bases of tubercles, tubercles protruding from sinuous lateral margin (fig. 1); thoracic groove short, almost obsolete. Eight eyes in two rows, eyes large, subequal in size; anterior medians circular, dark, other eyes light, laterals oval, posterior medians irregularly rectangular, flattened; from above, both eye rows slightly procurved, from front, anterior row slightly procurved, posterior row strongly procurved; anterior medians separated by almost their diameter, slightly closer to anterior laterals; posterior medians separated by almost their diameter, separated by more than their diameter from posterior laterals; anterior and posterior laterals separated by more than their diameter; median ocular quadrangle about as wide in front as in back, slightly longer than wide. Chelicerae, sternum, and mouthparts dark red; chilum apparently fused to carapace, which is prolonged at midline; second, short, posterior chilum (extremely narrow sclerite separating bases of chelicerae posteriorly) present; chelicerae with deeply excavated ridge opposite carapace margin, followed distally by distinct lateral boss and large median boss occupying most of paturon width, promargin with series of short setae originating in line along base of fang, with long, thick, modified seta originating closest to fang; promargin with teeth obsolete, represented by fused ridge, retromargin without teeth; cheliceral gland openings not scanned. Labium elongated, truncate anteriorly and posteriorly, distinctly depressed medially; anterior surface not scanned. Endites obliquely depressed, with sharply demarcated, deep groove along margin near labium; serrula long, with single row of teeth; anterior surface not scanned. Sternum flattened, with inclined sides, fused to epimeric sclerites so that coxae originate from foramina completely enclosed by sclerotized cuticle (except between legs III and IV of females, where the fusion is not entire, with tiny strip of unsclerotized cuticle remaining between sternum and epimeric sclerite); surface smooth, with circular punctations. Epimeric sclerites not

fused with carapace. Pedicel elongated, composed of two small, flat dorsal sclerites and rounded sclerite covering venter and sides, rounded sclerite with slight median longitudinal keel, without anterior protrusion extending toward sternum.

Anterior edge of abdomen in males with rectangular dorsal scutum extending to almost half of abdominal length; dorsal scutum anteriorly separated from epigastric scutum only by narrow strip of unsclerotized cuticle; females without dorsal scutum; cuticle with long dark setae; epigastric scutum accompanied posterolaterally by pair of oval, deeply invaginated sclerites bearing clearly elevated anterior rim; anterior edge of oval sclerites fitting under epigastric scutum; sclerites of male expanded into rectangular plates occupying about one-third of postepigastric portion of abdominal venter; colulus represented by transverse row of setae posterior of tiny transverse sclerite presumably marking position of small posterior spiracle. Anterior lateral spinnerets tubular, separated by roughly their diameter, cuticle representing distal, second spinneret segment restricted to semicircle surrounding major ampullate gland spigots (piriform gland spigots surrounded only by soft cuticle, apparently only one or two present); posterior median spinnerets small, tubular, without anteriorly expanded tips; posterior lateral spinnerets two-segmented, spigots unscanned.

Legs spineless, laterigrade; most surfaces with long, dark setae; anterior coxae with protuberant posterolateral corners; coxae tuberculate, coxae IV much longer than others; trochanters unnotched; anterior metatarsi and tarsi with weak but distinct, divided scopulae composed of short, thickened, bent setae; posterior metatarsi with thick, dark, distal preening brushes (stronger on leg III than IV); posterior tarsi with weak, entire scopulae; tarsi with two finely dentate claws, claw tufts composed of lateral pads of closely appressed setae; trichobothria present on tibiae, metatarsi, and tarsi, in 2–3 irregular rows, bases unscanned; tarsal organ unscanned. Female palpal tarsus without spines, with tiny claw.

Male palp with retrolateral tibial apophysis accompanied by strong macroseta, cymbial surface with retrobasal excavation opposite retrolateral tibial apophysis; tegulum expanded, extending beyond posterior rim of tarsus; embolus laterally situated, inset into membranous conductor; median apophysis absent. Epigynum with v-shaped median septum; spermathecae on short stalks.

### *Platylampona mazeppa*, new species
Figures 1–8

TYPE: Male holotype taken by pyrethrum sampling of gidgee (an indigenous group of *Acacia* species) trunks at an elevation of 240 m at the north end of Mazeppa National Park, 22°14′S, 147°15′E, Queensland (Mar. 27, 2001; G. Monteith), deposited in QMB (S55138).

ETYMOLOGY: The specific name is a noun in apposition taken from the type locality.

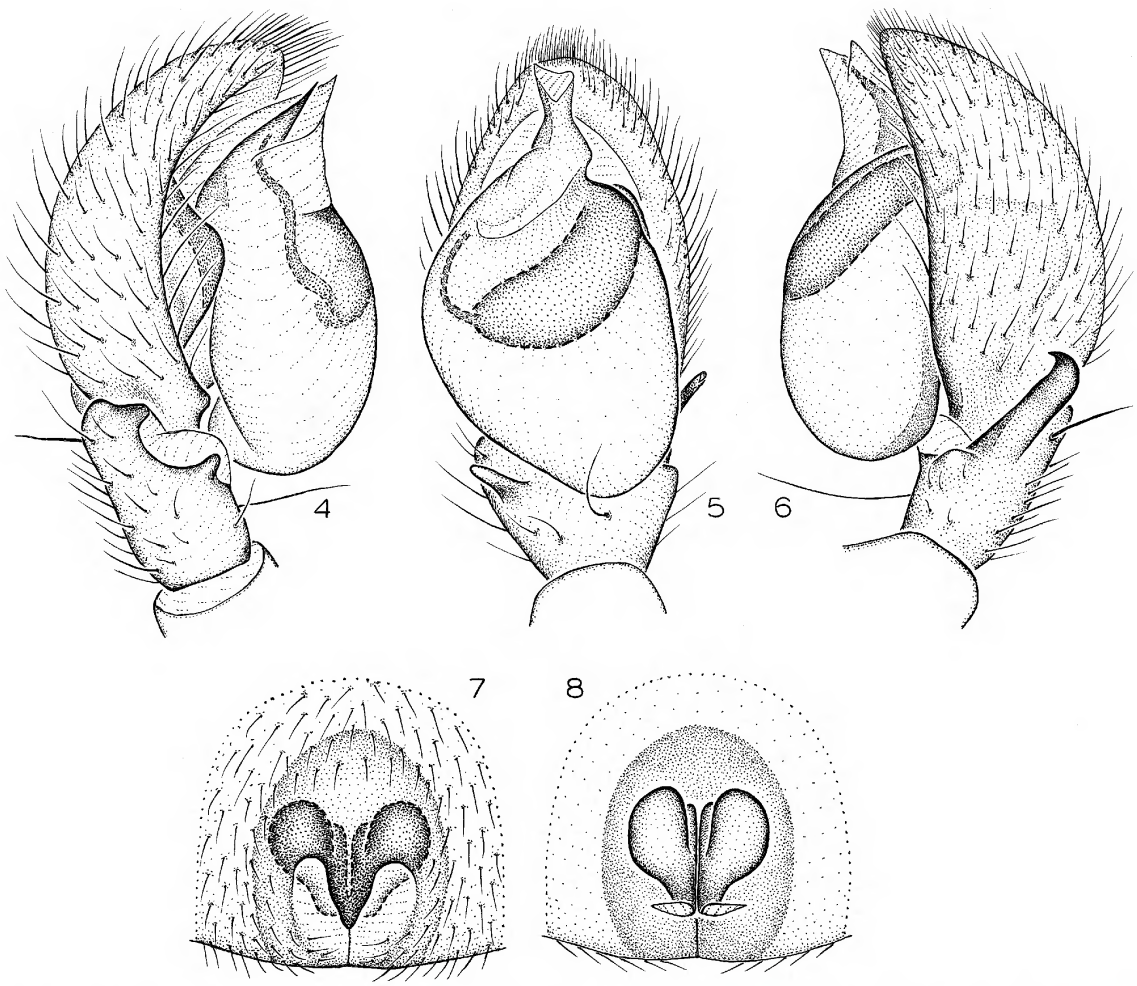
DIAGNOSIS: With the characters of the genus and genitalia as in figures 4–8.

MALE (holotype): Total length 2.9. Dorsal and postepigastric abdominal scuta light orange, unsclerotized portion of abdominal dorsum mottled gray, venter unmarked; legs light orange, unmarked, anteriors darkest. Palpal femur with distinct ventral enlargement at about one-third its length; patella dorsoventrally flattened, laterally widened; tibia short, retrolateral portion about as long as retrolateral tibial apophysis, dorsally and prolaterally prolonged, with one or two thick macrosetae on prolongation; palpal tegulum enlarged, protruding ventrally beyond base of cymbium, embolus situated prolaterally, apically extended into fine point (figs. 4–6).

FEMALE (from type locality): Total length 3.8. Coloration as in male (but without abdominal scuta). Epigynum with anterior margins and median septum forming m-shaped ridge, openings apparently at anterolateral corners of median septum; spermathecae oval, on short stalks (figs. 7, 8).

VARIATION: The male palpal tibia can have either one strong dorsal macroseta (as shown in figs. 4, 6) or two, but the distinction does not seem to be taxonomically significant, as the number can differ on the left and right palps of a single specimen.

OTHER MATERIAL EXAMINED: AUSTRALIA: **New South Wales:** Atholwood Loop Road, 500 m N of road at point opposite Retford Springs, Severn State Forest,




Figs. 4–8. *Platylampona mazeppa*, new species. **4.** Left male palp, prolateral view. **5.** Same, ventral view. **6.** Same, retrolateral view. **7.** Epigynum, ventral view. **8.** Same, dorsal view.

29°04′28″S, 151°00′53″E, Nov. 22–Dec. 13, 2001, pitfall (L. Wilkie, H. Smith, AMS KS81891), 1♂; 16 km S Texas (Queensland), 29°00′S, 151°09′E, Nov. 24, 1983 (D. Rentz, M. Harvey, ANIC), 2♀. **Queensland:** 3 km NW Langlo Crossing, 26°07′S, 145°39′E, May 4, 2001, pyrethrum, gidgee (G. Monteith, QMB), 1♀; S end, Mazeppa National Park, 22°16′S, 147°16′E, Dec. 18, 2000–Mar. 26, 2001, elev. 240 m, flight intercept trap, brigalow (D. Cook, G. Monteith, QMB), 1♀; site 3, Mazeppa National Park, 22°16′S, 147°17′E, Mar. 27, 2001, elev. 240 m, pyrethrum, gidgee trunks (G. Monteith, QMB S55141), 1♂; on road 7 km NNE Mount Bluffkin, 22°36′S, 149°14′E, June 2, 2002, elev. 160 m, pyrethrum, brigalow (G. Monteith, QMB S52782), 1♂; 5 km SW Mount Robert, 21°24′S, 148°27′E, Mar. 26, 2001, elev. 300 m, pyrethrum, tree trunks and logs, brigalow (G. Monteith, QMB S55136), 1♂.

DISTRIBUTION: Known only from central and southern Queensland and northeastern New South Wales.

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